mounted there, much will probably depend upon the success attending the construction of the 30-inch refractor, which Alvan Clark and Sons have engaged to furnish for the Imperial Observatory at Pulkowa, but the trustees purpose to secure a 12-inch to be used in the observation of the next transit of Venus, and to remain one of the permanent fixtures of the Observatory.

San José is in about 121° 50′ west of Greenwich, and 37° 16′ N. Of Mount Hamilton it is stated that, "although practically out of the coast range fog-belt, an occasional gale blows the mist across the Santa Clara Valley from two points—Monterey Bay and the Sand-hill Gap just south of the city. On extraordinary occasions this fog reaches the crest of Mount Hamilton, but ordinarily the sky is cloudless all summer." The trustees have their work well in hand, though there remains much to be done before the whole design of the munificent founder of the observatory can be realised. It is intended that a meridian-circle, an instrument necessarily requiring considerable time in its construction, and other accessories, shall be provided in addition to the great telescope and the smaller equatorial. If we are not mistaken, Mr. Burnham has added a number of new double-stars to our lists, from his tentative work with the 6-inch refractor on Mount Hamilton.

GEOGRAPHICAL NOTES

A RUSSIAN journal announces the early departure of a scientific expedition, under the direction of Lieut. Onatsevitch, to make hydrographic investigations in the Sea of Japan and the Sea of Okkotsk. One of M. Onatsevitch's assistants, Ensign Heller, has already gone to Vladivostock in the cruiser *Asie*, taking with him numerous instruments with which the hydrographic department has equipped the expedition. M. Lanevsky Volk and four other naval officers will accompany M. Onatsevitch by way of Siberia. The object of this expedition is to fill lacunæ in the works of Babkine, Bolchew, Staritsky, Yelagnine, and others. It will have to explore, especially from the hydrographic point of view, the mouths of rivers which fall into the Sea of Japan, from the southern frontier of Russia to the Bay of Castries. It will make geodetic observations in the south-west part of Peter the Great Bay and at the mouth of the Amour. Lastly, it will study the water-courses, and the east and south parts of the Isle of Sakhaline, the district of La Perouse, &c.

AT the meeting of the Geographical Society on Monday evening the secretary read a paper by Capt. A. H. Markham on the Arctic campaign of 1879 in the Barents Sea. The title of the paper, however, is somewhat of a misnomer, as the narrative was chiefly confined to the proceedings of the *Isbjörn*, to which we have already referred. Some few details were also furnished as to the trip of the second Dutch expedition in the *Willem Barents*. Among the various matters of interest dealt with, perhaps one of the most interesting was the description of a large glacier on one part of the coast of Novaya Zemlya. This glacier Capt. Markham ascended, and walked along it for some two or three miles into the interior; he found numerous fissures in it, at the bottom of which ran rivulets, and some of which were so deep and wide that they could not be crossed except by making a long *détour*. During the trip a considerable amount of information was gained in regard to the movements of the ice in the Barents Sea, and the best season for future attempts at exploration, especially in the direction of Franz Joseph Land; it was made quite clear, however, that a larger vessel and the aid of steam are absolutely necessary to secure really useful results.

WITH reference to the discovery of the sources of the Niger, it is stated that MM. Zweifel and Moustier traversed the Hokko and Limbah countries, which, covered with forests on Winwood Reade's visit ten years ago, was now found very little wooded, the demand for the oily almonds of the palm tree having induced the natives to plant oil palms in the place of forests. A Koranks mission told the explorers that the Niger passed between Mount Lemat and another mountain, and that its three sources, the junction of which formed a small lake, were two days' march from the latter. After many dangers and privations, the travellers found the main source near the village of Koulaks, on the frontier of Koranks, Kissi, and Kono, its native name being the Tembi. The travellers could not enter the Sangara country on the right bank of the river; but they are confident that the Tembi is the longest of the three streams mentioned by the Koranks, and consequently the origin of the Joliba or Upper Niger.

M. DE LESSEPS is to leave in a few days for Central America, in order to survey the concession granted by the Columbian Government for a sum of 750,000 francs, which was paid a few months since. The surveying within a certain time is an obligation which, not being complied with, would render the concession void. The promoter of the new canal took leave of the Geographical Society of Paris on November 21.

THE Freie Deutsche Hochstift at Frankfurt has received further news from Dr. Gerhard Rohlfs and his travelling companion Dr. Stecker, according to which the two travellers were already on a steamer sailing for Malta. Herr Rohlfs is said to be so exhausted that he intends to abstain from any further African exploring expeditions. Amongst the objects which the travellers were robbed of are all their diaries, notes, and scientific instruments, besides the rich collection of presents sent by the Emperor of Germany to the Sultan of Wadai.

NO. 10 of Band xxii. of the *Mittheilungen* of the Vienna Geographical Society, contains papers on the Ethnological Conditions of South Russia at their chief epochs, from the earliest times to the first appearance of the Sclavs, by Dr. Jar. Vlach; the Mississippi and its Basin, by Dr. Hesse-Wartegg; the district of Shushu, in Transcaucasia, by Carla Serena. Among the notes is a valuable statistical and geographical account of the Vilayet of Trebizond, from an Austrian Consular Report. As a supplement to the *Mittheilungen* is announced a *Zeitschrift für wissenschaftliche Geographie*, edited by Julius Iwan Kettler, assisted by a staff of eminent German geographers. This journal will embrace all departments of mathematical, physical, commercial, ethnological, descriptive, and historical geography; and promises to prove one of the most valuable geographical journals published. It will be issued every two months.

CAPT. HOWGATE has published a neat little volume on the cruise of the *Florence* in the preliminary Arctic Expedition of 1877-8. He gives many interesting notes made during the wintering in Cumberland Gulf, both of the country and people. The scientific results have been published separately, and these we shall notice in detail.

THE *Cape Argus* announces the starting in October of an African Expedition from the Cape, under, and at the expense of, two young Englishmen, Messrs. Beaver and Bagot. They have only two bullock waggons and a few blacks, but their ambitious programme is to make a "General and Astronomical" survey of the whole region between the Zambesi and the Albert and Victoria Nyanzas. This region is ignorantly described in the *Argus* as being almost totally unexplored. The two light hearted young Englishmen allow themselves four years to accomplish their gigantic undertaking. We shall watch their progress with curiosity. They are stated to have had an interview with the Geographical Society before leaving; the officials of the Society, we believe, are not able to recall the incident.

IN a letter to M. Sibiriakoff, Prof. Nordenskjöld expresses his intention of undertaking another voyage to the northern coast of Asia as soon as circumstances permit. "After my return," he says, "I think of spending a year on preparing an account of the voyage of the *Vega*, and it is my desire then to continue the exploration of the Icy Ocean along the coast of Siberia, making the River Lena the point of departure, and the New Siberian Isles the basis of operations. For the object I have proposed to myself—namely, the rendering of the northern part of Asia completely accessible to commercial shipping—the prosecution of these researches is of paramount importance."

A TELEGRAM to the *Moscow News*, dated Katt Koorgan, November 14, gives the latest intelligence received from the Russian scientific expedition appointed to explore the Oxus or Amu Darya, and report on the best route for a great Central Asian railway. On October 19 the members met the Khan of Khiva, who said he would give orders in due time for the demolition of the dams at Bant and Shamurat. The eldest men among the Yomouds and Tschenderen pledged themselves to procure labourers for the purpose of cleaning out the bed of the Usboi between Sary Kamysch and the Caspian Sea.

THE death is announced of the Dutch lieutenant, Koolemans Beynen, who accompanied Sir Allen Young in his two *Pandora* voyages, and last year was second in command of the Dutch

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Arctic expedition in the *Willem Barents*. He edited for the Hakluyt Society an account of the three voyages of William Barents. A daily contemporary confounded Lieut. Beynen with the well-known Arctic explorer, Lieut. Payer, who, we are glad to say, is alive and as well as ever.

RECENT advices from Japan state that the port of Gensan in Corea has been opened to Japanese traders. The Japanese, however, appear to have been more anxious to obtain the opening of Nikawa, a more important place, and about nineteen miles from the capital, Hányang (Séoul). The Coreans refused to concede this point, probably on account of a sacred character attaching to the road which separates the two.

BIOLOGICAL NOTES

OOSPORES OF "VOLVOX MINOR."—Dr. Kirchner, in the recent part of Cohn's "Beiträge zur Biologie der Pflanzen," describes the germination of the oospores, and in this supplements the important contribution made by Cohn himself to our knowledge of this interesting plant in the first volume of the same work. The first appearance of germination was in February. The contents of the oospores during a rapid swelling out of the endospore, made their appearance through the ruptured exospore, and soon presented a sphere-shaped body, which then divided into two portions, these being perpendicular to one another. The newly-formed cells so separate from one another that they hang together by their ends. These ends form the one pole of the later-to-be-developed ball-like colony; the other pole is afterwards closed in, when the maximum of the cells is attained. Each oospore thus gives rise through cell division, followed by the characteristic cell displacement, to a new volvox colony. The fact of *V. minor* being dicecious was given as a character to distinguish it from *V. globator*, but this, according to the author, does not hold true; both colonies seem to pass through a purely female stage and afterwards through a male stage, each colony being bi-sexual.

CEDAR OF LEBANON IN CYPRUS.—Sir Samuel Baker, in his late residence in this island, has been fortunate in bringing to light the existence of this tree, or a variety of it, according to Sir J. D. Hooker. It seems the monks of Trooditissa Monastery assured the former that the "chittim-wood" of Scripture, a kind of pine, grew in the mountains near Krysokus. Trusty messengers having been despatched in search thereof, they brought back specimens of a cedar, with dense foliage and a superior quality of wood. Sir J. Hooker, to whom the specimens were forwarded, after a careful examination, finds that this tree differs from the true cedar of Lebanon in having shorter leaves and smaller female cones, with other slight differentiations. He names it, therefore, *Cedrus libani*, var. *brevifolia*, a short botanical account of which, along with Sir Samuel's letter, he laid before the Linnean Society at their last meeting. In his letter Sir S. Baker further hints that a variety of cypress some thirty feet high and seven feet girth, with a cedar-coloured wood, and powerfully aromatic scent of sandal-wood, in his opinion, is the celebrated "chittim-wood." He asks: "Why should Solomon have sent for cedar, which is so common in Asia Minor?" Another hard-wooded cypress, of twenty feet high, yields an intensely hard wood resembling *Lignum vitæ*.

NEW GENUS OF MYRIAPOD.—In the October number of the *American Naturalist* Mr. J. A. Ryder describes and figures a new genus allied to the little myriapod described some years since by Sir John Lubbock as Pauropus. This new American form is found in moist situations under sticks and decaying vegetable matter. It is called *Eurypauropus spinosus*, receiving its generic name in reference to its great relative width. The body is composed of six segments, possibly of seven. The head is partly free, the surface of the head and other segments is covered with small tubercles or spines. Two pairs of legs are attached to each of the second, third, fourth, and fifth segments, which, with a single pair on the first segment, makes nine pair in all. The legs are completely concealed in life by the lateral expansions of the body segments. The oral region seems to be very similar to that in Pauropus. There is no evidence of tracheal openings. Eyes seem to be absent. The antennæ are five-jointed, inserted close together at the front of the head, and are branched. The outer branch bears two of the many-jointed filaments, between the bases of which arises a pedicel surmounted by an ovoid semi-transparent body with linear sepal-like processes clasping it much as in *Pauropus pedunculatus*. The length is one-twentieth of an inch, and the habitat Fairmount Park, Eastern Penna.

ZOSTERA MARINA.—A. Engler, in a recent number of the *Botanische Zeitung* (October 10), has published some interesting observations on the fertilisation and growth of the sea grass growing at Kiel. He pronounces Hofmeister's observations on the fertilisation of Zostera as incorrect, but corroborates those of Clavaud (published in the *Botanische Zeitung* for August). At first it is true that the thread-like stigma lies on the neighbouring anther lobes, mostly those of two different anthers; next the style elevates itself, and so the stigma comes out of the narrow slit in the sheath, and receives the pollen given out by some of the older spadices. After fertilisation, the thread-like stigmas disappear, and at the same moment will be found clusters of as yet unopened anthers around the stigmaless gynœcia, these now having fertilised ovules. This was probably the stage observed by Hofmeister when he described the fertilisation as taking place inside the unopened inflorescence. Certainly the anther-lobes are not at this stage always emptied of their contents, and certainly when this emptying takes place the gynœcia are often beyond the power of being fertilised. The conditions of the buds in Zostera also specially engaged Engler's attention, because the sympodial bud system appeared similar to that in many of Araceæ. The main shoot which roots in the mud develops out of the angle of the nodal scale like lower leaves, which, however, soon die off, sterile buds, and then after the formation of four to six internodes in the ground, grows upwards, now developing leaves often a metre long, but never in the same year is the inflorescence observed. The sterile sprouts are found to the right and to the left of the main shoot; the upper internodes of this latter elongate and erect themselves, but now in the angles of the lower leaves are only fertile buds developed, which lie alternately right and left of the main axis. The first fertile bud is generally quite free, and carries three to four club-shaped bodies sympodially arranged as described by Eichler. The following fertile buds grow for a great while along with the main axis, the axis of growth thus presenting a flattened cone-shaped form with two furrows superimposed on a cylindrical axis. As to the inflorescence, Engler suggests that it is not impossible, but that the Gynœcia and Androecia may each represent separate flowers so arranged that male and female flowers of the simplest type should stand opposite to one another. This, though opposed to the views of Ascherson and Eichler, seems to have some support from the fact that in the case of Spathicarpa ("Flora Brasiliensis," pl. 51), one of the Araceæ, this position of the male and female flowers occurs; only in this case, there can be no doubt of the fact, as there seems of necessity to be in Zostera, for the Androecia and Gynœcia are in Spathicarpa formed of several sexual leaves.

THE ONTOGENY AND PHYLOGENY OF THE CTENOPHORA.—Prof. Haeckel, in a recent number of *Cosmos* (vol. iii. Part 5, August, 1879), describes a new form which he calls *Ctenaria ctenophora*, as a connecting-link between the Ctenophora and the Medusæ. This species is figured, but fuller details are promised in the author's "System of the Medusæ," which, illustrated with forty plates, is nearly ready for publication. The new form is placed as a craspedote in the order of the Anthomedusæ, and in the family of the Cladonemidæ. Accompanying a brief description, there is an interesting paragraph on the "Ontogeny and Phylogeny of the Ctenophores." It would seem highly probable that the Ctenophores are descended from the Cladonemidæ, and that their still earlier ancestors were Hydrozoa allied to Tubularia. Among the newer adaptations, by means of which the Medusæ form of the younger Ctenophore originated, the most important is undoubtedly the change in the method of locomotion. The Medusæ swim in a spasmodic manner by irregularly contracting their umbrellæ, and then driving the water out of the cavity. The easy gliding, swimming movement of the Ctenophoræ is brought about by the vibrations of the little oar-blades which cross over the surface of the eight radial ciliated combs. While this newer form of motion took the place of the former, a number of other changes were immediately brought about according to the laws regulating the correlation of organs. The more important morphological relations were nevertheless, through the conservative power of inheritance, preserved. This interesting form possesses the eight ad-radial thread-cell channels as in Ectopleura, the trichter as in Eleutheria, the oral formation as in Cytæis, the canal-formation as in Cladonema, and the tentacles and tentacular pockets as in Gemmaria; transitory between two classes, it furnishes a new convincing proof of the verity of the doctrines of development.

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